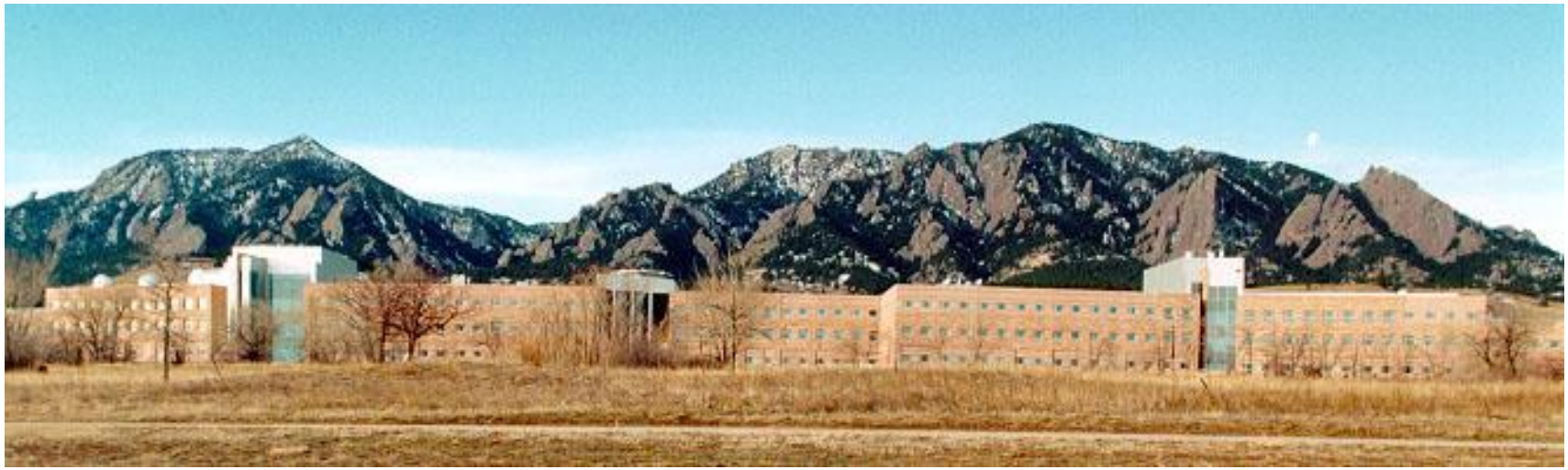


# *Program Management Review*

**12 January 2006**

**Covering 4QFY05 & 1QFY06**


**Dr. William F. Denig, Chief**

**Solar-Terrestrial Physics Division**

**NOAA/NESDIS**

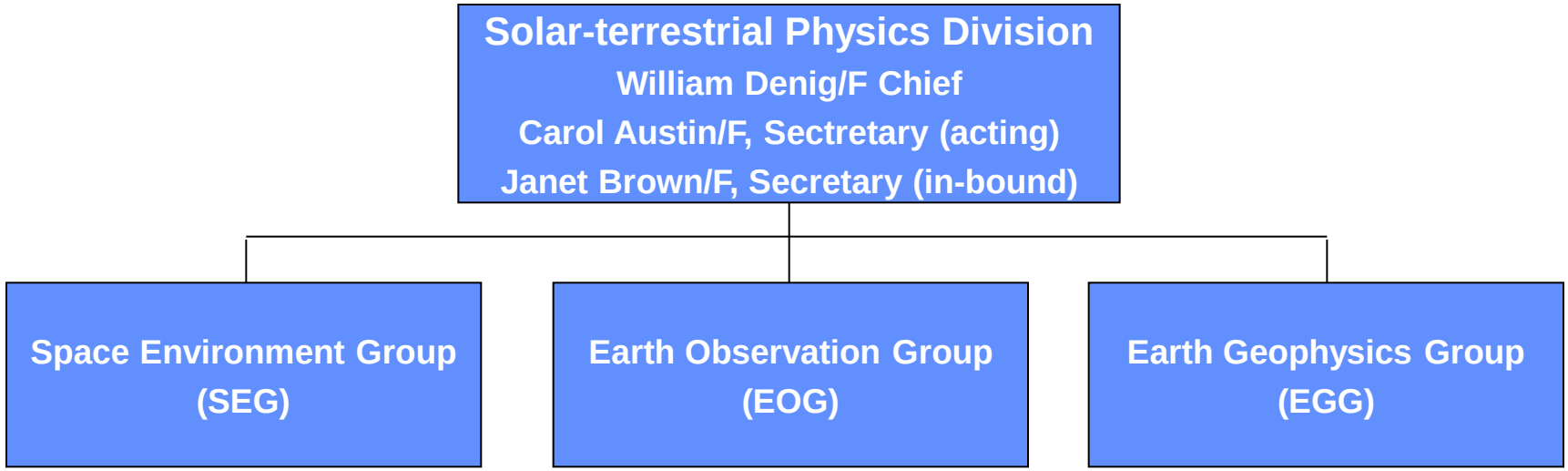
**303 497-6323**

**William.Denig@noaa.gov**

# OUTLINE
## STP Program Management Review

- **STP Overview/Status (8)**
- **Space Environment Group (15)**
- **Earth Observation Group (9)**
- **Earth Geophysics Group (9)**
- **Concluding Remarks (1)**

# WHO WE ARE
## STP Overview




**Eric Kihn/F, Team Lead**
- Terry Bullett, AFRL
- Craig Clark/F
- Helen Coffey/F
- Ray Conkright/C
- Ed Erwin/F
- Justin Mabie/C
- Rob Redmon/F
- Herb Sauer/C
- Dan Wilkinson/F

**Chris Elvidge/F, Team Lead**
- Kim Baugh/C
- Pat Hayes/C
- Ara Howard/C
- Ben Tuttle/C
- Vacant/C
- Vacant – Data Manager/F

**Sue McLean/F, Team Lead**
- Patrick Alken/C
- Kathy Brantley/C
- Ron Buhmann/F
- Paula Dunbar/F
- Karen Horan/C
- Joy Ikelman/C
- Stefan Maus/C
- Rob Prentice/C
- Jesse Varner/C
- Chris Hammond/S
- Andrew Kimbrel/S
- Kelly Stroker/C
- Vacant – Data Manager/F

Key
F – Federal
C – CIRES/CIRA
S – Student

# Personnel Changes*
## STP Overview

- **Gains**
  - **Pat Alkin/C (EGG) – Geomagnetic data & services**
  - **Justin Mabie/C (SEG) – Ionospheric digital database**
  - **Bill Denig/F (STP) – Division Chief**
- **Losses**
  - **Jeff Safran/C (EOG) – DMSP data processing**
- **Vacancies**
  - **EOG data manager (Federal)**
  - **EOG EO scientist (CIRES)**
  - **EGG data manager (Federal)**
- **Inbound**
  - **Janet Brown/F (STP) – Secretary**
- **Pending**
  - **Kathy Brantley/C (EGG) – Leaving Jan '06**
  - **Ron Buhmann/F (EGG) – Probable retirement in FY06**
  - **CIRES PRA Geodesist (EGG) – Advertised**
  - **CIRES PRA Marine scientist (EGG) – Advertised**



***Changes include 4QFY05 and 1QFY06**

# FY05 Milestones
## STP Overview

| PPBES Program | STP FY05 Milestones | Status | Planned Completion Date | Actual Completion Date | Responsible Person |
|---|---|---|---|---|---|
| Marine Transportation Systems | Deliver global magnetic declination products for 2005-2010 to the FAA and NOS for aeronautical and nautical charting (e-charting). | C | 2QFY05 | 2QFY05 | McLean, Maus |
| Marine Transportation Systems | Increase by 40% the amount of volcanic ash imagery scanned and made available on-line. | C | 2QFY05 | 2QFY05 | McLean, Dunbar |
| Space Weather | Space Weather climatology 11-year achive completed and made available on-line. | C | 2QFY05 | 2QFY05 | Kihn |
| Marine Transportation Systems | Extend current main magnetic field model to include crustal magnetic field components valid at ground level | C | 4QFY05 | 4QFY05 | McLean, Maus |
| Space Weather | Transition updated rt-AIME (Assimilative Mapping of Ionospheric Electrodynamics) model to operational space forecast center | C | 4QFY05 | 4QFY05 | Kihn |
| Space Weather | DMSP-SSIES (ion Scintillation Monitor) data integration with SPIDR and made available on-line | C | 4QFY05 | 4QFY05 | Kihn |
| Space Weather | Increase the volume of CORS-GPS data archive by five Terabytes | C | 4QFY05 | 4QFY05 | McLean, Bunmann |
| Marine Transportation Systems | Deliver three Terebytes of DMSP data on-line annually (includes download of data from www and data transferred via ftp | C | 4QFY05 | 4QFY05 | Elvidge |
| Marine Transportation Systems | Increase the volume of DMSP tape library archive by three Terabytes | C | 4QFY05 | 4QFY05 | Elvidge |
| Marine Transportation Systems | Deliver 200,000 distinct DMSP satellite images and corresponfing metadata files to the Department of Defense in support of the U.S. was on terrorism | C | 4QFY05 | 4QFY05 | Elvidge |

C **Milestone complete**

G **Milestone on-track**

Y **Watch item or change**

R **Management attention required**

# FY06 Milestones
## STP Overview

| | PPBES Program | STP FY06 Milestones | Status | Planned Completion Date | Actual Completion Date | Responsible Person |
|---|---|---|---|---|---|---|
| | Space Weather | Complete the rescue of the PCI data including, archive preservation, integration in the SPIDR and quality analysis. | C | (Q1) 12/31/2005 | (Q1) 12/15/2005 | Kihn |
| AOP → | Space Weather | Construct a 15-year gridded database of results from linked assimilation models | G | (Q2) 3/31/2006 | (Q2) 3/31/2006 | Kihn |
| | Space Weather | Complete the rescue of the RSTN data including, archive preservation, integration in SPIDR and quality analysis | C | (Q2) 3/31/2006 | (Q2) 1/9/2006 | Coffey |
| | Space Weather | Publish a Looking Forward to GOES-R web announcement for current users of GOES and POES SEM data | G | (Q2) 3/31/2006 | (Q2) 3/31/2006 | Wilkinson |
| | Space Weather | Add 50 Gigabytes of high resolution daily solar H-alpha images to NGDC archives | G | (Q3) 6/30/2006 | (Q3) 6/30/2006 | Coffey |
| | Space Weather | Automate the collection, analysis, archive, and dissemination of the USAF ionospheric sounding stations | G | (Q4) 9/30/2006 | (Q4) 9/30/2006 | Redmon |
| AOP → | Space Weather | Publish Space Weather Analysis (SWA) derived products such as indices via the web | Y | (Q2) 3/31/2006 | ***(Q4) 9/30/2006*** | Kihn |
| | Space Weather | Complete migration of space weather data to the ADIC TLS: GOES SEM, POES SEM, and GOES SXI | Y | (Q2) 3/31/2006 | ***(Q4) 9/30/2006*** | Wilkinson |
| AOP → | Space Weather | Integrate the NASA CDAWeb data resources with the Space Physics Interactive Data Resource (SPIDR) system. | Y | (Q3) 6/30/2006 | ***(Q1) 13/31/2007*** | Kihn |
| | Marine Transportation Systems (***vice SWP***) | Improve resolution of crustal magnetic field model from degree 90 to 720 to improve ENC navigation models. | Y | (Q4) 9/30/2006 | (Q4) 9/30/2006 | McLean |
| AOP → | Tsunami (***Vice Marine Trans.***) | Establish archive of tsunami program DART and BPR historical data (3 GB) | Y | (Q2) 3/31/2006 | (Q2) 3/31/2006 | Dunbar |
| | Tsunami (***Vice Marine Trans.***) | Review and document 60% of deadly past tsunami events | Y | (Q2) 3/31/2006 | (Q2) 3/31/2006 | Dunbar |
| | Marine Transportation Systems | Increase volume of CORS GPS data ingested annually and placed into the archive by 2 TB. | Y | (Q2) 3/31/2006 | ***(Q4) 9/30/2006*** | McLean |
| | Marine Transportation Systems | Increase the volume of the DMSP tape library archive by 4 TB | G | (Q4) 9/30/2006 | (Q4) 9/30/2006 | Erwin |
| | Marine Transportation Systems | Delivery of 3 TB of DMSP data on line. | G | (Q4) 9/30/2006 | (Q4) 9/30/2006 | Elvidge |
| | Marine Transportation Systems | Generation of first global DMSP OLS imagery constructed area grid at 1 km resolution | G | (Q4) 9/30/2006 | (Q4) 9/30/2006 | Elvidge |
| | Marine Transportation Systems | Implementation of new near-real time satellite data processing and delivery system for DMSP OLS | Y | (Q4) 9/30/2006 | ***(Q1) 13/31/2007*** | Elvidge |

# Financial
## STP Overview

| Team | Income | Expenses | Net | Status |
|---|---|---|---|---|
| SEG | 2,306K | 2,331K | -25K | Y |
| EOG | 722K | 903K | -181K | R |
| EGG | 1,715K | 1,715K | 0 | G |

G Income = Expenditures

Y Income is within 10% of but not equal to Expenditures

R Income is not within 10% of Expenditures

# CDMP FY06 Proposals
## STP Overview

| Subject | New | Continuing | POC | Contractor ($K) | NGDC ($K) | Comments |
|---|---|---|---|---|---|---|
| Heat capacity mapping mission | X | | Elvidge | 40.0 | 4.0 | Accept |
| DMSP film scanning | | X | Elvidge | 800.0 | 75.0 | Accept |
| Historical solar spectral data | X | | Coffey | 60.0 | 6.0 | Pending[1] |
| Historical solar observations | | X | Coffey | 85.0 | 8.5 | Accept |
| Historical ionosonde records | | X | Kihn | 75.0 | 7.5 | Accept[2] |
| Rescue of historical tsunami data | X | | Dunbar | 30.0 | 3.0 | Accept[3] |

Notes:

[1]Discuss with NRL - Accept only If NRL will execute program without support

[2]NGDC will prepare & forward only 30 station years of data (1 MM JEM)

[3]NGDC will prepare & forward photos & historical publication only

# MOUs / MOAs
## STP Overview

# STATUS

| NGDC | Team | Type | | NOAA Legal | DOC Legal | NGDC Signed | Partner Signed | Year | Duration | Status | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| DMSP Archive | SEG | MOA | DMSP | X | X | X | | 2 | 5 | Y | **Awating DMSP signature** |
| AFCCC | SEG | MOU | AFWA | X | X | X | X | 3 | 10 | G | Nothing to report |
| Ionosonde | SEG | MOU | AFWA | X | X | | | - | 5 | G | Need to assess viability; AFWA visit |
| NASIC | EOG | MOU | NASIC | X | | | | - | 5 | G | Just starting |
| CORS Support | EGG | MOU | NGS | X | X | X | X | 3 | 3 | G | Do accomplishment then re-negotiate |
| World Mag Model | EGG | MOU | NGA | X | X | X | | 3 | 5 | Y | **Modified; Awaiting NGA signature** |

| Other | Team | Type | | NOAA Legal | DOC Legal | NOAA Signed | Partner Signed | Year | Duration | Status | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SWARM | EGG | MOU | NPOESS | X | X | | | | | G | Approved by State; Awaiting ESTEC |

# Technology Thrust Areas
## STP Overview

- **Space Environment Group (SEG)**
  - Space Physics Interactive Data Resource
  - Space Weather Analysis
  - CLASS Recon Force
  - Satellite SWx Data
  - Solar Data Services
  - Ionospheric Digital Database
- **Earth Observation Group (EOG)**
  - DMSP-OLS archive & NRT services
  - Annual Nighttime Lights Composites
    - ✓Cities, fires, fishing boats, gas flares
- **Earth Geophysics Group (EGG)**
  - Natural Hazards Database
  - Continuously Operating Reference Station
  - Geomagnetic Data & Services

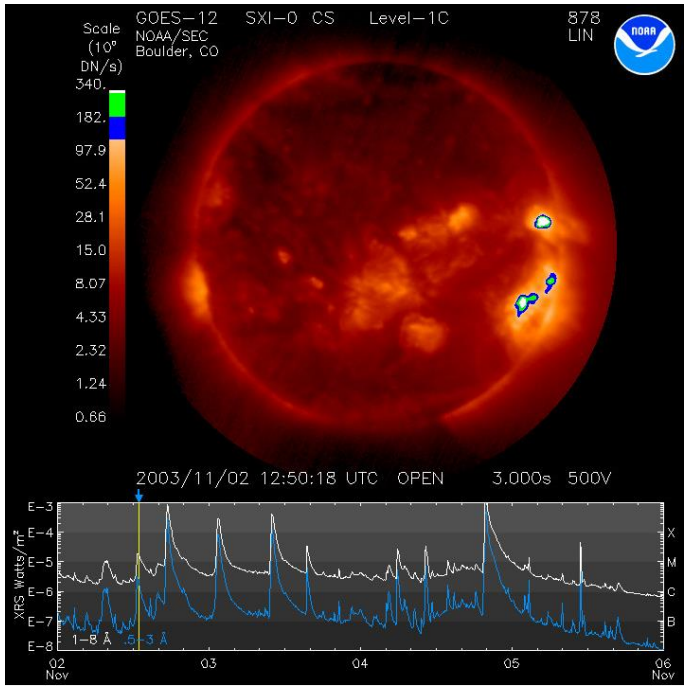
# OUTLINE
## STP Program Management Review

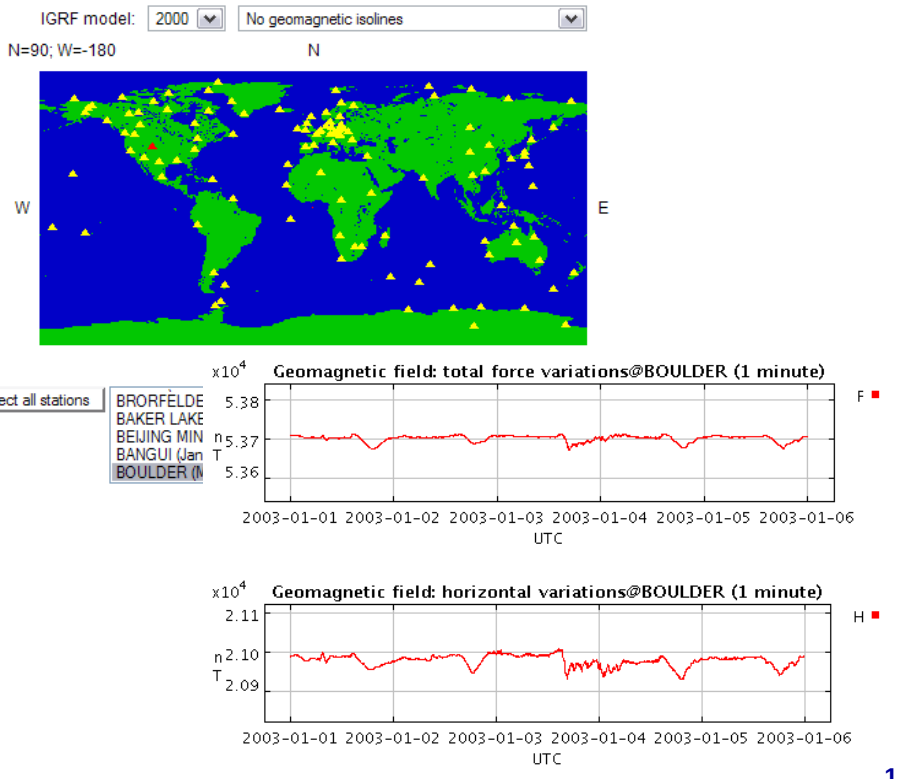
- STP Overview/Status
- Space Environment Group
- Earth Observation Group
- Earth Geophysics Group
- Concluding Remarks

# Space Environment Group
## Overview

***The Space Environment Group is focused on the archive and management of NOAA's space environmental data. The SEG also supports international data exchange and collection through World Data Center activities.***

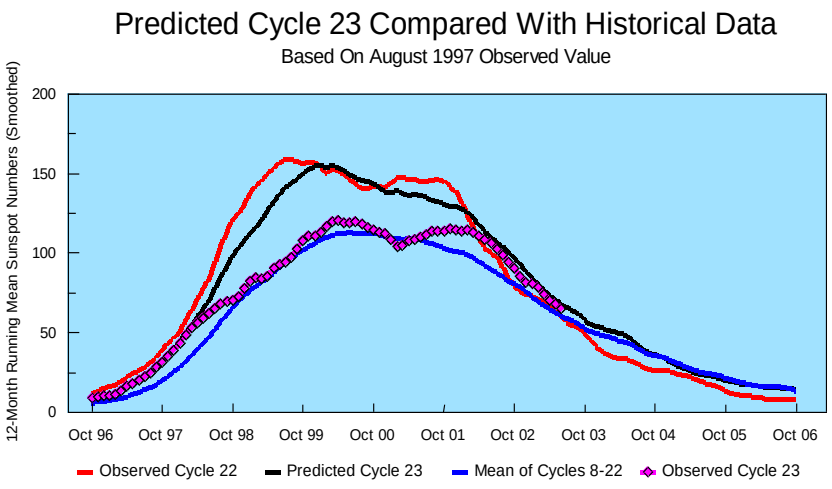
**Team Lead: Eric Kihn**

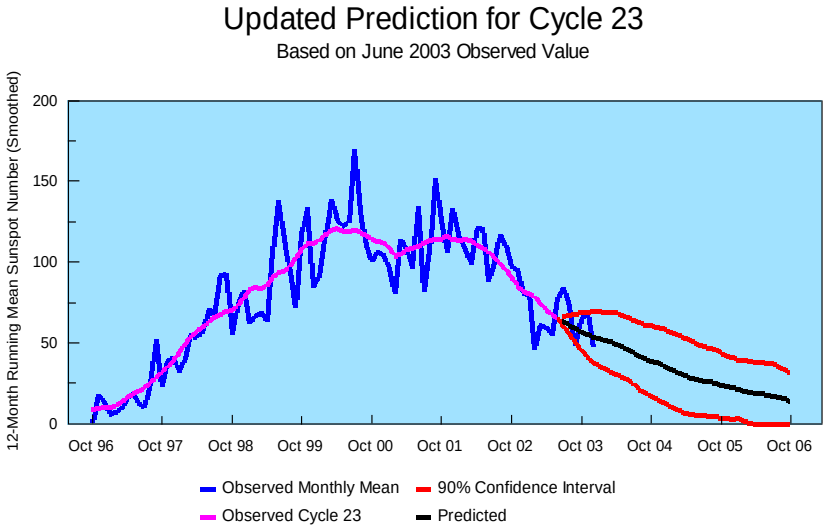


# Space Environment Group
## Core Competencies

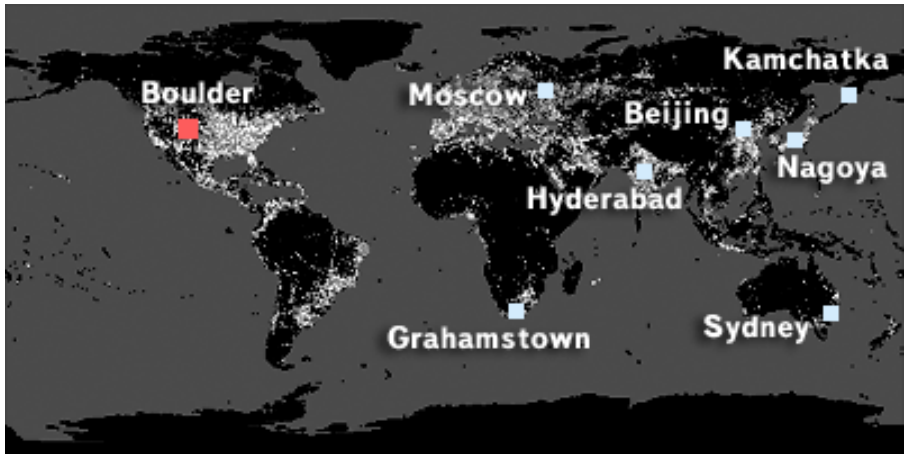
- **Management of space environmental data**
- **Publisher of solar–geophysical indices**
- **Archivists of GOES/POES/DMSP space data**
- **Development of ionosonde QA/QC tools**
- **Flagship product – SPIDR**



# STP/SEG Task
## Space Physics Interactive Data Resource

Global SPIDR mirror sites




SPIDR nodes as of January 2006.

Background – SPIDR is a distributed network of synchronous databases and 100% Java middle-ware servers accessed via the World Wide Web. SPIDR 4.0 is in test phase.

Purpose – SPIDR allows a solar terrestrial physicist to intelligently access and manage historical space data for integration with environmental models and space weather forecasts.

Milestones

**1QFY06** – Complete rescue of PCI data.

⇨ **4QFY06** – Publish SWA derived products such as indices via the web (*revised*)

⇨ **1QFY07** – Integrate CDAWeb with SPIDR (*revised*)

⇨ Milestone in the AOP

Team Members

Eric Kihn – 303 497-6346

Mikhail Zhizhin – Geophysical Center, RAS

Rob Redmon – 303 497-4331

Space Weather program

# STP/SEG Milestone
## Space Physics Interactive Data Resource

Milestone – Complete the rescue of the Polar Cap Index (PCI) data including, archive preservation, integration in the Space Physics Interactive Data Resource (SPIDR) and quality analysis.

Background – The PCI was introduced by *Troshichev et al.* [1979, 1988] as an index for monitoring geomagnetic activity over the polar caps caused by changes in the interplanetary magnetic field (IMF) and solar wind. This important index was missing in SPIDR.

Completion Date - Planned: (Q1) 12/31/2005 Current: Complete (12/15/05)

Status – The PCI data was received from Troshichev, quality controlled using the SWA database and ingested into SPIDR. The PCI will be publicly available with the release of SPIDR 4.0.

Cognizant Person: Eric Kihn Program: Space Weather

Ref.
Troshichev et al., *Planet. Space Sci., 27*, 217, 1979
Troshichev et al., *Planet. Space Sci., 36*, 1095, 1988

# STP/SEG Milestone
## SWx Derived Products

Milestone – Publish Space Weather Analysis (SWA) derived products such as indices via the web.

Background – The SWA produces output which may be considered as the level-0 or raw space weather data. In order to maximize the utility for the STP community we need to convert this raw archive through post-processing into more standard products such as indices. This will generate very valuable resources currently missing in the community such as CPCP and AE.

Completion Date - Planned: (Q4) 9/30/2006 Current: (Q4) 9/30/2006

Status – Indices being generated, validation underway. On track for September delivery.

Cognizant Person: Eric Kihn Program: Space Weather

# STP/SEG Milestone
## Space Physics Interactive Data Resource

Milestone – Integrate the NASA Coordinated Data Analysis (CDA)Web data resources with the Space Physics Interactive Data Resource (SPIDR) system.

Background – Several years ago under Herb Kroehl NGDC started the process of integrating the CDAWeb and SPIDR systems. Funding received from NASA was used to process the POES SEM data into a format compliant with web-based services. The current effort is focused on incorporating these data into SPIDR and then linking with CDAWeb.

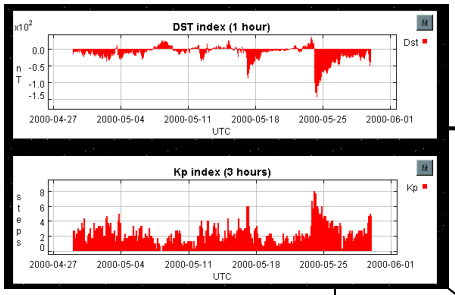
Completion Date - Planned: (Q1) 12/31/2006 Current: (Q1) 12/31/2006

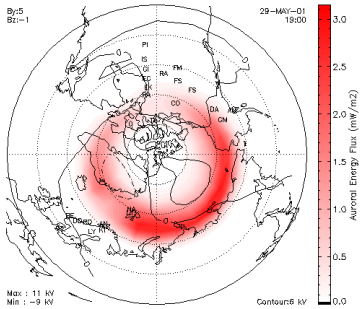
Status – EAK has entered into discussions with NASA HQ (C. Holmes) regarding continuation of efforts of integrating the CDAWeb and SPIDR. EAK and WFD will visit Jim McGuire and staff of NASA's National Space Science Data Center (NSSDC) on 26 Jan 06 to review the status of CDAWeb and SPIDR interactions. This trip will be combined with a visit to Michael Hesse and staff of NASA's Community Coordinated Modeling Center (CCMC) on 27 Jan 06.

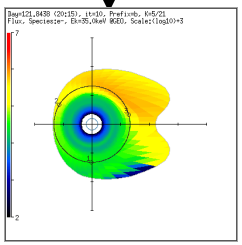
Cognizant Person: Eric Kihn Program: Space Weather

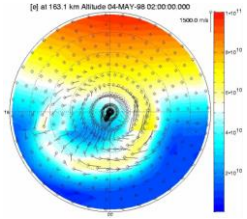
***Note: Now a 1QFY07 deliverable***

# STP/SEG Task
## Space Weather Analysis





SWA Data Flow

Purpose – The objective of this project is to generate a complete 16-yr space weather representation using physically consistent data-driven space weather models. The project will create a consistent, integrated, historical record of the near Earth space environment by coupling observational data from space environmental monitoring systems archived at NGDC with data-driven, physically based numerical models.

Upcoming Milestones

⇨ **2QFY06** – Construct a 15-year gridded database of results from linked assimilation models

⇨ Milestone in the AOP

Team Members

Eric Kihn – 303 497-6346

Aaron Ridley – Univ. Michigan

Rob Redmon – 303 497-4331

Space Weather program

# STP/SEG Milestone
## SWx Derived Products

Milestone – Construct a 15-year gridded database of results from linked assimilation models: Assimilative Mapping of Ionospheric Electrodynamics, a coupled ionosphere-thermosphere model-Global Ionosphere Thermosphere Model and an inner magnetosphere model-Simulation of the Inner Magnetosphere Model.

Background – This output is the data driven description of the near-Earth space environment minus the radiation belts.

Completion Date - Planned: (Q2) 3/31/2006 Current: (Q2) 3/31/2006

Status – AMIE and GITM runs are complete for 15 yrs. The SIMM runs are underway with the support of Dr. Trevor Garner (UT Austin). On track for March delivery.

Cognizant Person: Eric Kihn Program: Space Weather

# STP/SEG Task
## CLASS Recon Force

Comprehensive Large Array-data Stewardship System


Background – CLASS is the archive and distribution system for NOAA's large array data. NGDC is getting a node.

Purpose – NGDC would like to rapidly proto-type and develop an "open-CLASS" architecture capable of integrating many of NGDC's diverse data sets with the CLASS-ADS.

Status

**2QFY06** – Project plan to C. Fox

**3QFY06** – Interface specification complete

**4QFY06** – Proto-type system operational

Team Members

Eric Kihn – 303 497-6346

Ted Habermann – 303 497-6472

Scott McCormick – 497-5092

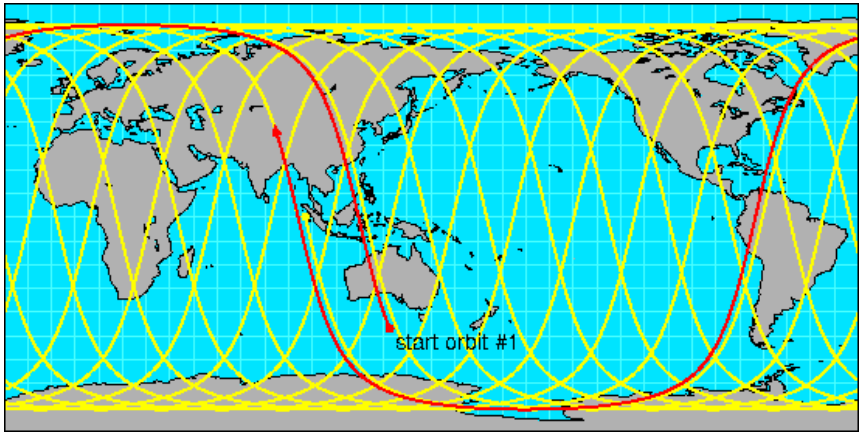
Doug Zirkle – 303 497-4331

Rob Redmon – 303 497-4331

Space Weather program

# STP/SEG Task
## Satellite SWx Data

POES daily orbits




Background – NGDC maintains a 30-yr historical database of satellite SWx data from DMSP, POES, and GOES

Purpose – Satellite data are used to determine extremes in SWx conditions and monitor long-term variations in the space environment. These data are also used in specific case studies in coordination with other space data.

Upcoming Milestones

**2QFY06** – Publish Looking-Forward-to-GOES-R web announcement

**4QFY06** – Complete migration of SWx data to ADIC TLS; GOES SEM, POES SEM and GOES SXI (*revised*)

Team Members

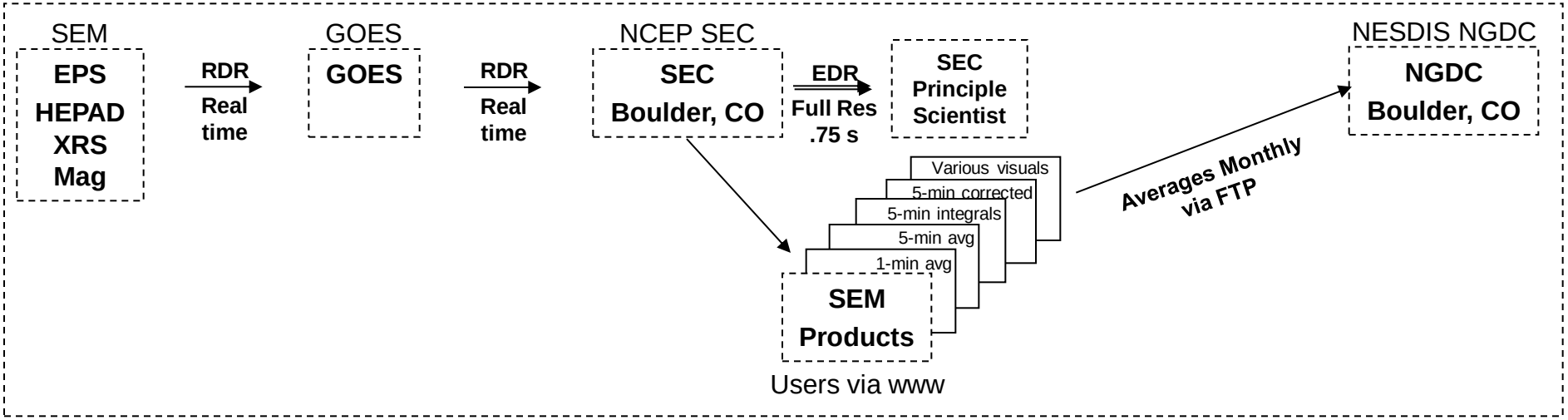
Dan Wilkinson – 303 497-6137

Ed Erwin – 303 497-6133

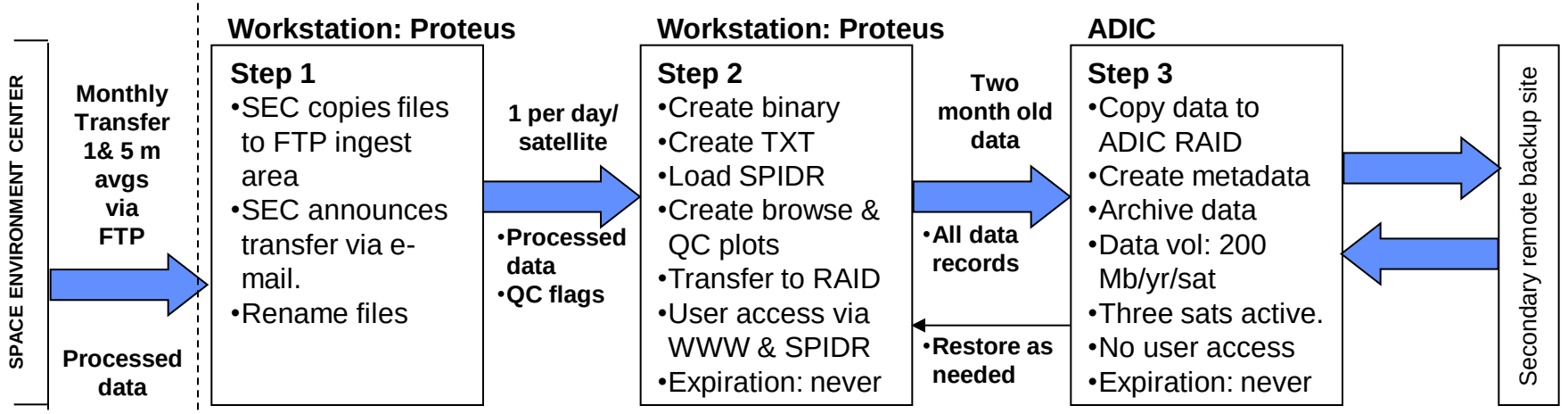
Space Weather program

# NGDC CONOPS
## GOES-10/11/12 SEM Data

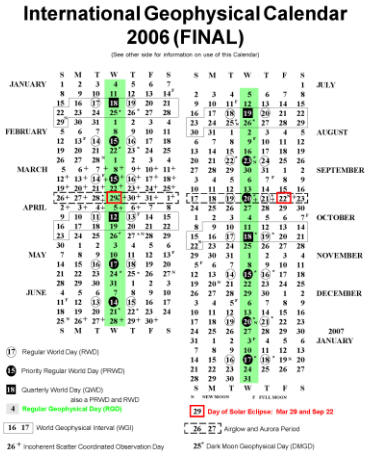
### Data Flow - Overview

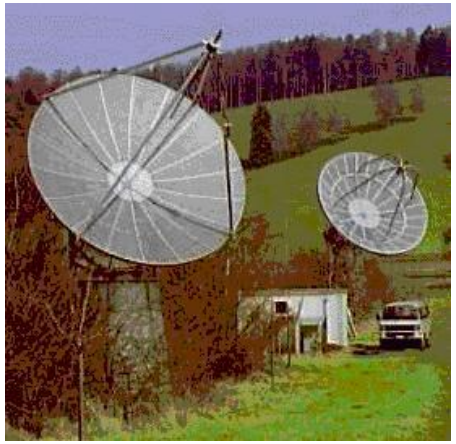



### NGDC Concept of Operations (CONOPS) – GOES SEM Data



# STP/SEG Task
## Solar Data Services



http://www.ngdc.noaa.gov/stp/SOLAR/solar.html

Background – The Solar Data Services group handles, archives and distributes solar data from the following disciplines; solar phenomena, solar flare-associated events, cosmic rays and solar publications.

Purpose – Provide a permanent repository for solar data to monitor changes in the sun and to track the influences that the sun has on our lives and environment.

Upcoming Milestones

**2QFY06** – Complete rescue of RSTN data

**3QFY06** – Add 50 GB of high resolution daily solar H-alpha images to NGDC archives

Team Members

Helen Coffey – 303 497-6223

Space Weather program

# STP/SEG Milestone
## Solar Data Services

Milestone – Complete the rescue of the Radio Solar Telescope Network (RSTN) data including, archive preservation, integration in Space Physics Interactive Data Resource (SPIDR) and quality analysis.

Background – The USAF RSTN solar radio spectrograph (SRS) sweeps the frequency range 25 to 180 MHz every 3 seconds. It monitors solar radio emissions originating mainly in the solar corona. It has a low band (25 to 75 MHz) antenna (non-tracking semi-bicone) and a high band (75 to 180 MHz) antenna (tracking log-periodic). Data are sent monthly to NGDC. Also, fixed-frequency data within 8 bands are recorded every second (245 MHz, 410 MHz, 610 MHz, 1,415 MHz, 2,695 MHz, 4,995 MHz, 8,800 MHz and 15,400 MHz)

Completion Date - Planned: (Q2) 3/31/2006 Current: (Q2) Completed – 1/9/2006

Status – The RSTN fixed-frequency data through 2004 have now been loaded into SPIDR. The data have been quality checked and are available for user browsing and plotting.

Cognizant Person: Helen Coffey Program: Space Weather

# Accomplishments
## Space Environment Group

- Attended CLASS Developers Meeting (Suitland)
- Hosted Russian delegation (IPE/RAS)
- Attended/presented at 3 papers at AGU (DCW, EAK, RR)
- 2 papers accepted for publication in JGR and Space Weather
- Completed SPIDR 4.0 development
- New SPIDR node deployed (Hyderabad) – http://210.212.216.181/spidr
- GOES-R Risk Reduction proposal regarding archive issues at NGDC was funded at $55k
- Prepared CONOPS for GOES SEM, POES SEM, and GOES SXI data sets
- SGD-3 monthly issues compiled and put on website

# Issues & Concerns
## Space Environment Group

- **Impact of CLASS on staff time – NGDC mission impact**
  - **Key SEG personnel (EAK/RJR) are being diverted to CLASS**
  - **SEG's core mission may be adversely affected**
  - **Recommend hiring a CIRES person to help maintain SPIDR**
- **Ionospheric project deadlines - Mirrion**
  - **NGDC is now an ionosonde world leader - thanks Terry B.**
  - **Mirrion IOC is 01Oct06 (AFWA) – NGDC credibility at stake**
  - **Need to revisit program plan within stressed resources (RJR)**
- **Lack of a geomagnetic data manager – EGG vacancy**
  - **SEG and EGG share geomagnetic data manager**
  - **EAK filling in as needed – NGDC mission diversion**

# OUTLINE
## STP Program Management Review

- STP Overview/Status
- Space Environment Group
- Earth Observation Group
- Earth Geophysics Group
- Concluding Remarks

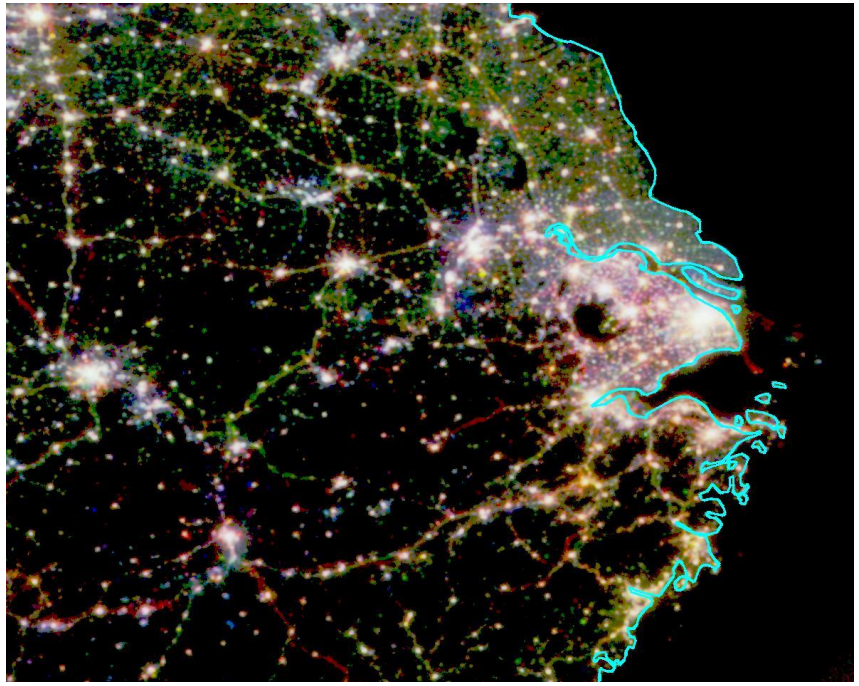
# Earth Observation Group
## Overview

***The mission of the EOG is to provide archive data management (ingest, archive and access) for NOAA and other earth observation remote sensing data, development and production of higher-level products, development of data delivery / customer base, and participation with scientific communities***

**Team Lead: Dr. Chris Elvidge**

- **Archive grows 15 GB/day**
- **Archive now at 56 TB[1]**
- **Annual composites are distilled from about 1 TB of geolocated OLS data**

[1]Does not include DMSP "raw" data backup



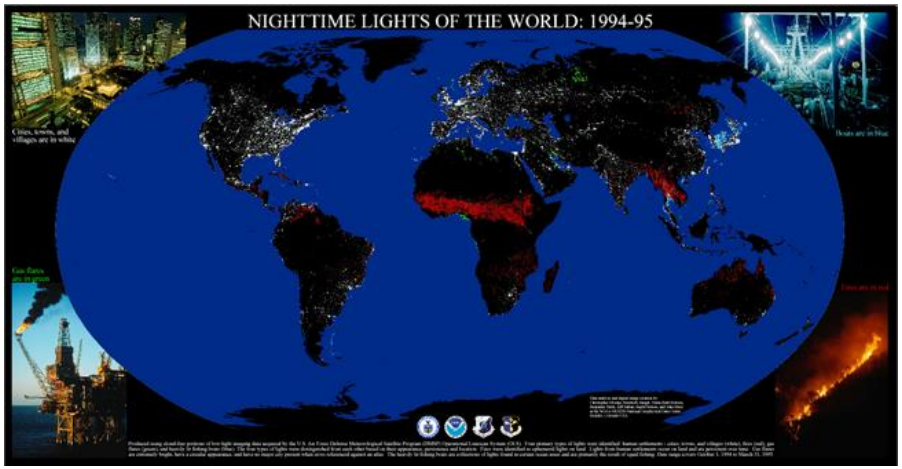
DMSP-OLS Average visible band DN color composite of Shanghai (2003, 1998, 1992 as red, green, blue)

# Earth Observation Group
## Core Competencies

- **Data managers for EO data**
- **Large volume data ingest**
- **Large volume data processing**
- **Large volume data delivery**
- **Flagship product – Nighttime Lights (Annual Composites and NRT)**

# STP/EOG Task
## DMSP NightTime Lights

NightTime Lights of the World




Background – DMSP OLS (visible and infrared) imagery from 1973 to present is used to observe lights from cities, fires, gas flares and fishing boats.

Purpose – DMSP NightTime lights are used to map changes in economic activity, population numbers and constructed area. The products are widely recognized as a key satellite observation of humanities presence on the land and ocean surface.

Upcoming Milestones

**4QFY06** – Increase volume of DMSP tape library archive by 4 TB

**4QFY06** – Deliver 3 TB of DMSP data on line

**4QFY06** – Generate 1st global DMSP OLS imagery constructed on a 1-km grid

**1QFY07** – Implement new near-real time satellite data processing & delivery system for DMSP OLS (*revised*)

Team Members

Chris Elvidge – 303 497-6121

Kim Baugh – 303 497-4452

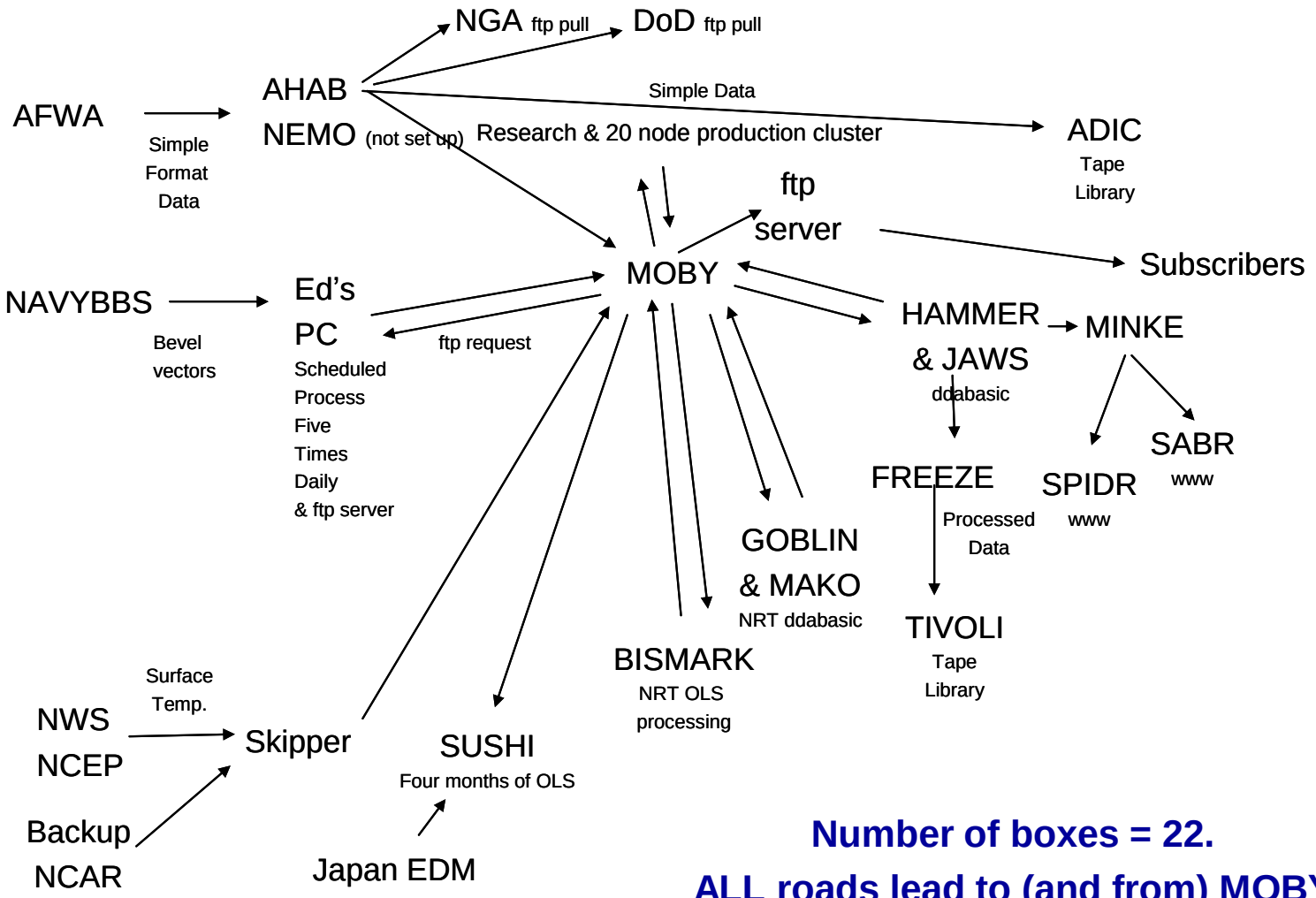
Ara Howard – 303 497-6469

Pat Hayes – 303 497-6764

Ben Tuttle – 303 497-3948

Space Weather program

# NGDC CONOPS
# DMSP NightTime Lights



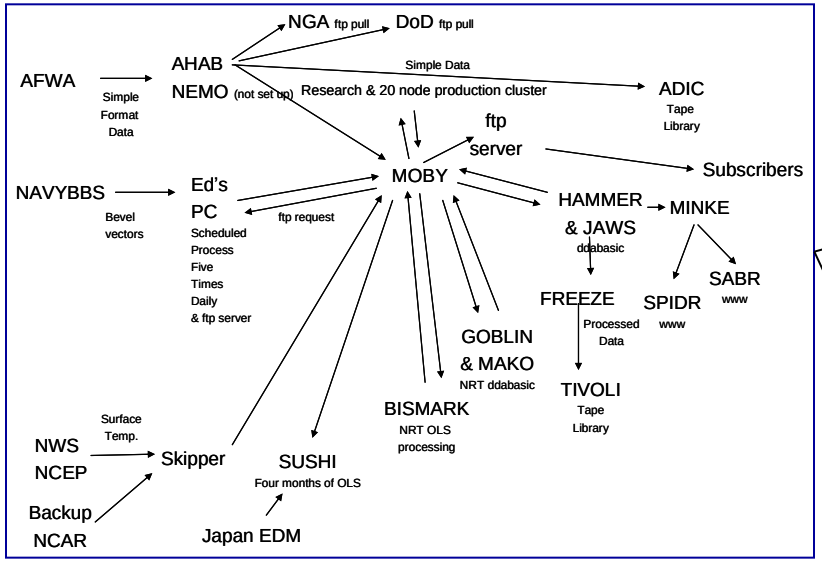

**Number of boxes = 22.**

**ALL roads lead to (and from) MOBY**

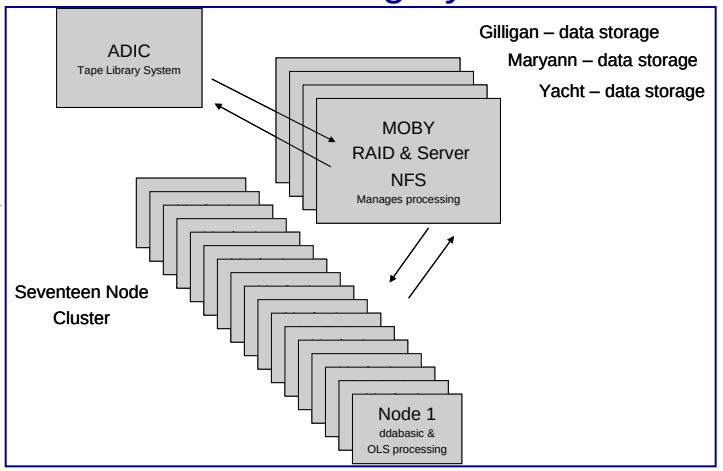
**When MOBY goes down we are kaput!**

# Revised CONOPS
## DMSP NightTime Lights

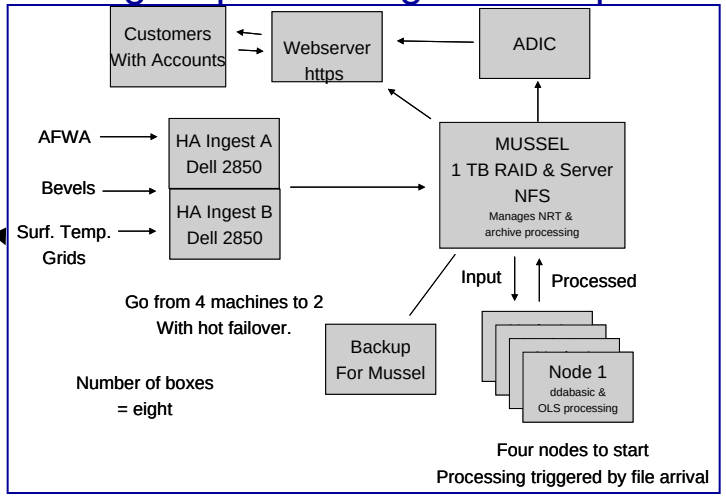
### Current Production and R&D




### Archive Processing System / R&D




### Ingest processing & NRT ops




- **Separate archive/NRT processing from R&D**
  - **Add redundancy – remove single point failures**
- **Migrate archive to ADIC**
  - **Cluster to draw from ADIC**
- **Migrate data service from ftp to https**
  - **Improve IT security and user access**
- **Incorporate growth flexibility**
  - **New systems would be machine scalable**

# Initiative - NRT Global Mosaics
## Earth Observation Group

- Assume implementation of new NRT system as described
- Planned NRT system with 4 nodes could accommodate the load
  - ✓ A single node can geolocate all the nighttime data from 4 DMSPs
  - ✓ Two nodes could do the geolocation + mosaic assembly
- Development needed to optimize override rules for best composites
  - ✓ Middles of orbits best, discard sunlit and glare
- Standard format would be UTD – spanning longitudes -180$^{o}$ to 180$^{o}$
  - ✓ Mosaic would be regenerated each time new data became available
- Finished UTD mosaics would be archived
- Web access allow unrestricted browse of decimated mosaics [*TBD*]
- Access to full resolution mosaics & interactive sub-setting via password protected subscription services [ *TBD*]

**Improved public/customer access to NRT global mosaics would be a great publicity draw**

# Future Directions
## Earth Observation Group

- Focus on service to NESDIS by providing data center functionality for NOAA and other EO data.
- Continue DMSP archive and flagship nighttime lights products. DMSP built out to F-20 (2015 – or possibility 2022 per latest NPOESS schedule alternative)
- Building data center functionality for additional EO data sets:
  - ✓ MODIS and VIIRS (they go together)
  - ✓ NOAA NOS scanned aerial photography (NOS has submitted a CDMP proposal for scanning the archive)
  - ✓ Other NASA EO data covered by 1989 MOU (e.g. HCMM)
- Develop capability to provide nighttime lights data and products from the VIIRS DNB data. Data from the IDPS will have to be reprocessed to fix scanline offsets and apply a terrain correction. EOG plans to work on the algorithms and develop a processing system for NRT users and global lights.
- Propose a NightSat specifically designed for global mapping of nighttime lights.
  - ✓ Mission concept submitted to NRC Decadal Survey
  - ✓ Peer review manuscript under consideration

# Accomplishments
## 1Q FY06 Earth Observation Group

- **2 peer review publications**
- **3 peer review manuscript submitted**
- **Completed processing of raw version 3 global nighttime lights:**
  - ✓ **65$^{o}$ to 75$^{o}$ latitude**
  - ✓ **1992-2005 (first six months of 2005)**
  - ✓ **Currently being used to analyze global trends in lightboat fishing and gas flaring**
- **MODIS query, browse and download SABR module rebuilt**

# Issues & Concerns
## Earth Observation Group

- **Additional funds are needed to cover projected FY06-07 expenses. NASA project ($100 K) is entering final year.**
- **To what extent should data services be funded by data sales and science projects – see Initiative – NRT Global Mosaics**
- **How can experimental products and services be migrated to operational?**
- **DMSP archive and nighttime lights support multiple NOAA programs – is Marine Transportation Systems the best program for the EOG? How about Satellite Data Services?**

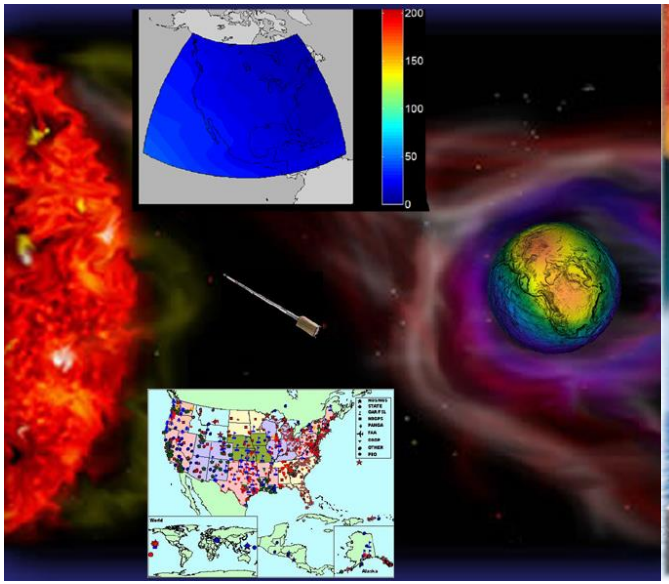
# OUTLINE
## STP Program Management Review

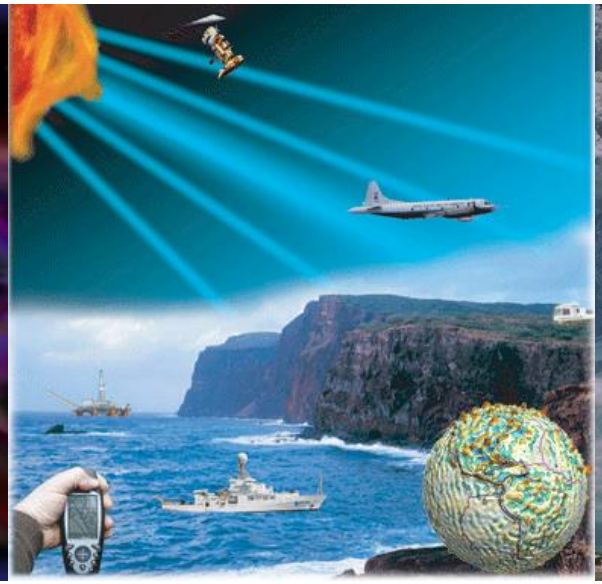
- STP Overview/Status
- Space Environment Group
- Earth Observation Group
- Earth Geophysics Group
- Concluding Remarks

# Earth Geophysics Group
## Overview

***The focus of the EGG is to provide scientific stewardship, products, & services for data from Earth's physical environment supporting safe navigation and mitigating the impact of geophysical hazards. The EGG also supports international data collection, exchange and visiting scientists through the WDC.***

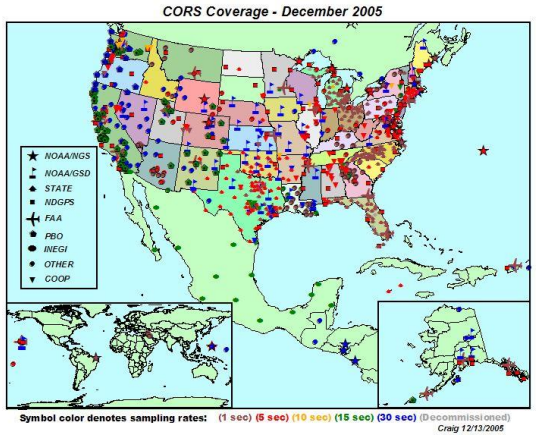
**Team Lead: Susan McLean**

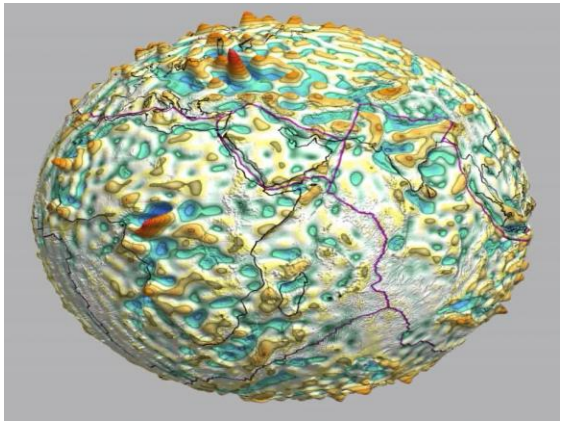





# Earth Geophysics Group
## Core Competencies

- **Management for GPS & geophysical datasets**
- **Monitor societal impacts of natural hazards**
- **Geomagnetic field modeling**
- **Flagship products – Integrated Historic Hazard DB**
  **World Magnetic Model**
  **GPS grnd network datasets**



# STP/EGG Task
## Natural Hazards Database

Prince William Sound Alaska Tsunami - 1964

Background – NGDC acquires, processes, analyzes & disseminates socio-economic & technical data on natural hazards, including earthquakes, tsunamis & volcanoes.

Purpose – Long-term data from natural hazards, including photographs, can be used to establish the past record of natural hazard event occurrences. These data are also important for planning, response and mitigation of future events.

Upcoming Milestones

**2QFY06** – Review and document 60% of the deadly past tsunami events[1]

⇨ **4QFY06** – Increase volume of historic tsunami, DART, bathymetric, and model data described, archived, and accessible on-line

⇨ Milestone in the AOP

[1]Recommend moving MS date to 4QFY06

Team Members

Susan McLean – 303 497-6478
Paula Dunbar – 303 497-6084
Kathy Brantley – Jan 2006 Vacancy
Joy Ikelman – 303 497-6419
Karen Horan – 303 497-6377
Kelly Stroker – 303 497-4603
Jesse Varner – 303 497-7893

Tsunami program

# STP/EGG Milestone
## Natural Hazards Database

Milestone – Establish archive of tsunami program Deep-ocean Assessment and Reporting of Tsunami (DART) Buoy and Bottom Pressure Recorder (BPR) historical data (three Gigabytes).

Background – After the devastating tsunami of December 2004, NOAA implemented a tsunami hazard improvement team and formed the NOAA Tsunami Program. Under both of these activities, NGDC has the role for the long-term archive of tsunami-related data, including NOAA's BPR / DART LTA. In August 2005, PMEL transferred the first installment of BPR data. We are now developing the transfer, archive, and access protocols and methods for the future.

Completion Date - Planned: (Q4) 9/30/2006 Current: (Q4) 9/30/2006

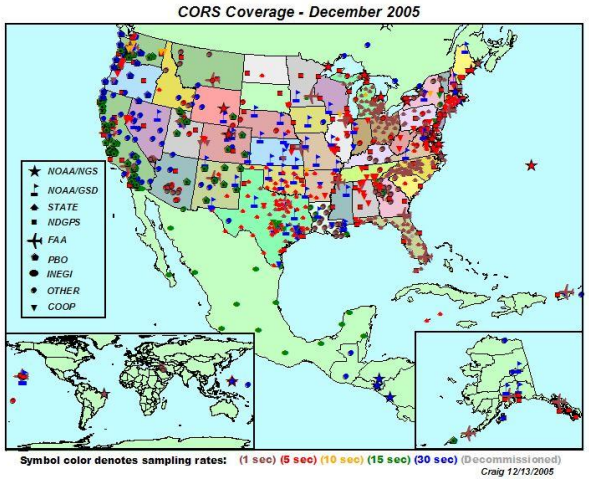
Status – On-track; DART collection metadata drafted, archive hierarchy established, prototyping access

Cognizant Person: Paula Dunbar Program: Tsunami

*Note: Within the NOAA Tsunami program this milestone is written as: Increase volume of historic tsunami, DART, bathymetric, and model data described, archived, and accessible on-line.*

# STP/EGG Task
## Continuously Operating Reference Station

### CORS Coverage




Background – NOAA / NGS coordinates a network of continuous GPS receivers for 3-dimensional positioning activities throughout the US and its territories.

Purpose – NGDC is an operational backup for the primary NGS site (in Silver Spring, MD). NGDC also supplies CORS data in near real-time to NOAA SEC and GSD for use in ionospheric and weather specification and forecast models.

### Upcoming Milestones

**4QFY06** – Increase volume of CORS GPS data ingested annually & placed into the archive by 2 TB (*revised*)

### Team Members

Susan McLean – 303 497-6478

Ron Buhmann – 303 497-6128

Ernie Joynt – 303 497-4493

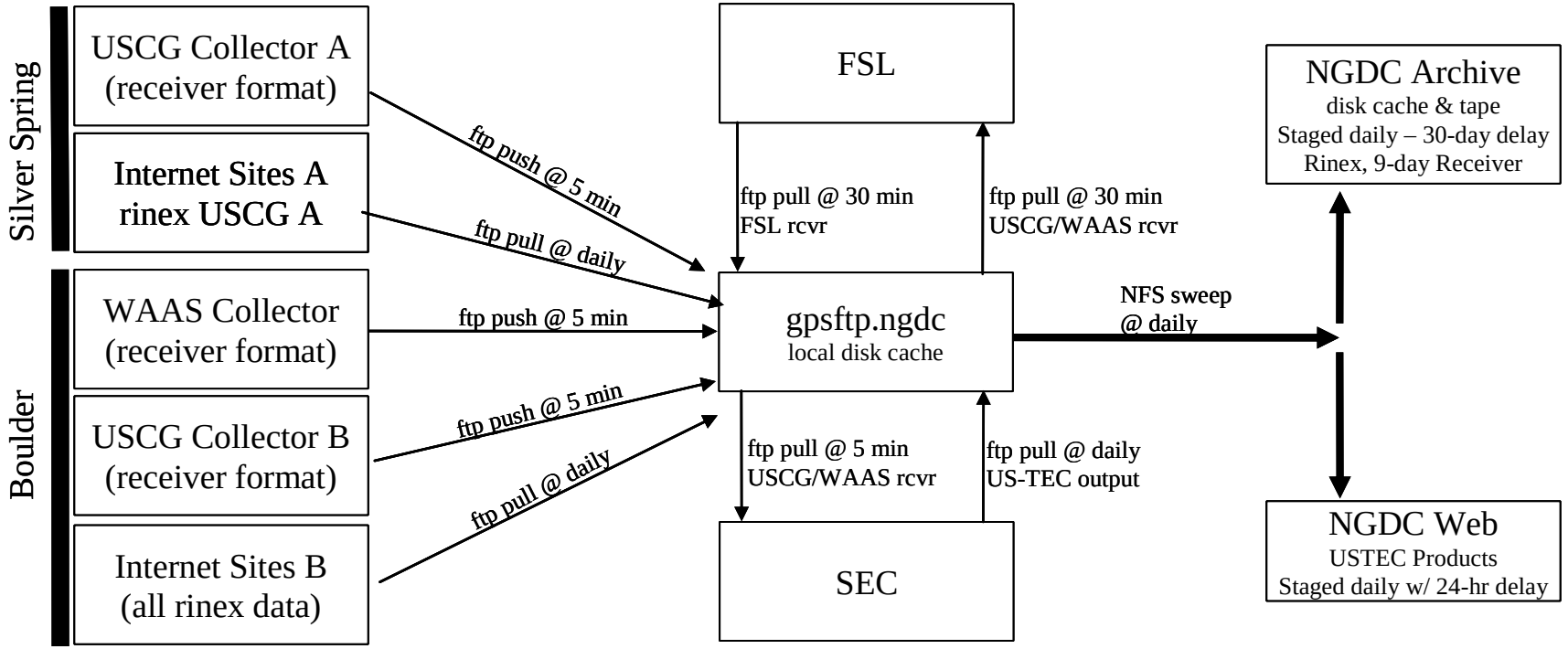
Rob Prentice – 303 497-6468

Karen Horan – 303 497-6277

Vacancy – CIRES PRA

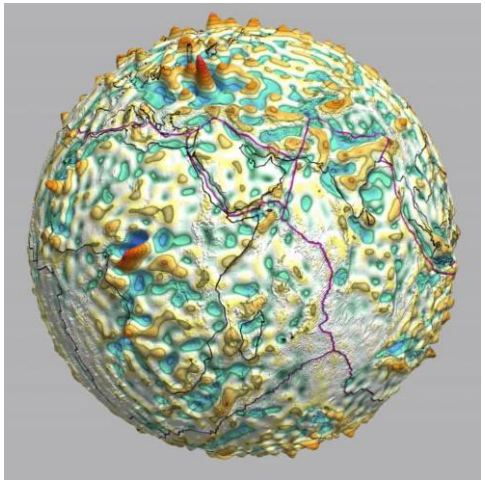
Marine Transportation System program

# NGDC CONOPS
## Continuously Operating Reference Station



# STP/EGG Task
## Geomagnetic Data & Services

Crustal Magnetic Field



Background – The WMM is the standard magnetic model used by US military/civilian agencies and allied nations. The WMM is a product of the United States National Geospatial-Intelligence Agency. NGDC and the British Geological Survey jointly produce the WMM.

Purpose – The WMM satisfies requirements supporting navigation and attitude/heading referencing systems.

Upcoming Milestones

**4QFY2005** – Improve resolution of crustal mag field from degree 90 to degree 720 to improve Electronic Navigation Chart (ENC) navigation models

Team Members

Susan McLean – 303 497-6478

Stefan Maus – 303 497-6522

Karen Horan – 303 497-6277

Joy Ikelman – 303 497-6419

Chris Hammond – 303 497-5480

Andrew Kimbrel – 303 497-5480

Patrick Alken – 303 497-5480

Marine Transportation System program

# Accomplishments
## Earth Geophysics Group

- **Report to Congress on NOAA's Data Management complete**
- 100% of the historic volcanic ash data archived & online
- Completed QA / QC of ~18% of the historic tsunami event database
- Added 4,457 Volcanic Events to historic event database
- Acquired and described BPR data for archive
- Ingested and archived over 9 Tb CORS data (FY05Q1- FY06Q1)
- **Supplied SEC with CORS data at 5-minute latency and archive / distribute SW products with 24-hour latency**
- Completed degree 90 crustal magnetic field model
- Distributed over 3,200 copies of the WMM & Software (CY05)
- Served over 850,000 online field values from the IGRF (CY05)
- Staff attended several major conferences, presented papers / posters, worked with data providers
- **12 papers published in peer-reviewed journals in 2005**

# Issues & Concerns
## Earth Geophysics Group

- **Vacancies**
  - Data Manager retired August 2005, position vacant
  - CIRES PRA Geodesist (advertised)
  - CIRES PRA Marine scientist (advertised)
- **Hazards QA / QC Partnerships (i.e. Humboldt State)**
  - Ensure quality and quantity
  - Developing and funding foreign expertise
- **Expanding uses of "SPIDR"**
  - New interest in SPIDR geomagnetic data sites
  - Utilizing SPIDR applets to serve hazards time-series
  - SPIDR serving of CORS station data
  - Expanding station histories in SPIDR
- **CIRES funding – tracking project budgets**
- **Funding of visiting scientists/projects via WDC structure**

# OUTLINE
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# Concluding Remarks
## STP Program Management Review

- STP division is healthy and fiscally sound (for the most part)
- We are looking towards the future but are deeply rooted in our past (in a good way)
- Mission continuity is a concern giving scheduled or possible retirements/departures/critical equipment
- CLASS WILL have an impact on our day-to-day NGDC responsibilities – how can we de-conflict CLASS efforts and milestone deliverables
- What do you need in order to make a decision regarding a geomagnetic data manager